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ABSTRACT

The purpose of this study was to find out how teachers use computers in education, and how they perceive the use of computers in education in Turkey. Data was obtained through a 90-item questionnaire, from 202 teachers working in the schools of one mid-sized and three major Turkish cities. The following questions were addressed in the study: "What is the current availability of computers to teachers and their students?" "How do teachers use computers in school and in the classroom?" "What are their beliefs about computers in educational settings?" and "What are the teachers' concerns and needs in terms of computer use and curriculum?" It was found that a considerable number of teachers (41%) had never used a computer. Still, most of the teachers indicated that they had positive beliefs about the influence of computer use in instruction. In expressing obstacles to computer use in instruction, teachers reported that the lack of computers, unsuitable curriculum, and the lack of teachers' knowledge of computers are the most important problems in their schools. (Contains 11 references and 9 figures.) (^EF)

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ELEMENTARY AND SECONDARY TEACHERS' PERSPECTIVES ABOUT THE COMPUTER USE IN EDUCATION

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Abstract

The purpose of this study was to find out how teachers use computers in education -if any- and how they perceive the use of computers in education in Turkey. Data was obtained through a 90-item questionnaire, from 202 teachers working in the schools of three major and one mid-sized Turkish cities. It has been found out that a considerable number of teachers (41%) had never used a computer. Still, most of the teachers indicated positive beliefs about the influence of computer use in instruction on student learning. In expressing the obstacles about the computer use in instruction, teachers reported that the lack of computers, unsuitable curriculum, and the lack of teachers' knowledge of computers are the most important problems of their schools.

ELEMENTARY AND SECONDARY TEACHERS' PERSPECTIVES ABOUT THE COMPUTER USE IN EDUCATION

Introduction

Rapidly developing technology increases the options for educational practice in schools. Increasing needs and expectations of the societies from information technology require according changes in the school curricula. In recent years the agenda for educational development of many countries include the integration of computer technology into education (Plomp, et.al. 1996). Similar efforts have been initiated in Turkey (Cagiltay, et.al., 1995). Recently, the Turkish government has started a new information technology project in order to take a major step for Turkey to leap to an information society. The main goals of the project are to bring the Internet connection and computers to the public schools, to educate the teachers about the use of technology, and to start the integration of information technologies to the educational system. In terms of its budget and its scope, this is a very important and large-scale project for Turkey.

The success of such a project depends mostly on the teachers who will be the key people in enacting the curriculum. Their beliefs about the computer use in education are very important in this sense. Unfortunately, not enough research on this aspect of the project has been conducted in Turkey. Being aware of teachers' beliefs and concerns will help in the decision making towards a successful integration of technology into the curriculum. The purpose of this study was to find out how the teachers use computers in education -if any- and how they perceive the use of computers in education in Turkey, and also to share this information with scholars from other similar countries.

The following questions were addressed in this study: What is the current availability of computers to the teachers and their students? How do teachers use computers in school and in the

classroom? What are their beliefs about computers in educational settings? What are the teachers concerns and needs in terms of computer use and curriculum?

Theoretical Background

In the last two decades, the use of computers in education has started to become an integral part of many developed countries' education systems, and all over the world a similar change occurs in many other countries. Policy makers of those countries are forming decisions with respect to the introduction of computers in education to prepare children for a life in an information society, but for most of those countries the current situation of computer use in education can be considered as only a beginning stage of a process that could last many years (Plomp, et.al. 1996).

The decisions of bringing computers to the schools deal with more than questioning what type of hardware and software should be used in schools. They also address curricular concerns such as technology's desired effects on education, needs for in-service training of teachers, and sometimes even the necessity of rearranging or adapting the physical facilities of the schools to accommodate computer use. Different visions about the place of information technology in education may lead to different emphases in policy goals and consequently, in actual policies.

Teachers are naturally involved in the educational use of computers and any educational innovation is filtered through them. Therefore, their decisions directly affect computer usage in schools. Teachers are the key players for a successful integration of computers to educational system (MacArthur and Malouf 1991, Yaghi 1996). As each teacher has her/his own way of using blackboard or any other tool in education, how to use technology in education and how to integrate technology with education also changes from teacher to teacher. So, the success or failure of integrating technology in education depends largely on experience and attitudes of the teachers (Moursund, 1979; Stevens, 1980; Marcinkiewicz, 1993; Andris, 1995).

In 1996, a cross-national analysis study was published about the educational use of computers in nineteen countries' schools. In those countries the common teacher feedback was that the success of using educational technology in the schools mainly depends upon the equipment, the nature of the teachers' training and logistic teams. The major reported problem was lack of attention paid to the teacher as the main focus for change and acceptance (Plomp, et.al. 1996). Also, in the educational technology literature, most of the studies on effective integration of computers into the education have mainly focused on what teachers need to successfully make use of computer technology (Hess & Miura, 1984; Martin, 1987; Sheingold, Martin, & Endreweit, 1987).

Methodology

This is a descriptive study, which was mainly based on quantitative data analysis in examining the research questions that are being investigated. The data for this study was collected through 95-item questionnaire that inquired a wide range of issues. During the 1998 fall semester, the surveys were given to the principals of each school and they were asked to distribute them to the teachers. Completed surveys were collected after about a week. Results from this survey were used as a baseline input data for SPSS. The results were analyzed by SPSS using quantitative methods.

Data Sources

The subjects of this study were 202 teachers (130 female, 71 male) of the randomly selected 25 different Turkish schools. The locations of the selected schools were two major and one mid-size cities of Turkey. Sixty seven percent of the teachers were from the schools, which have more than 500 students. Thirty four percent of all subjects (69) had computers in their home.

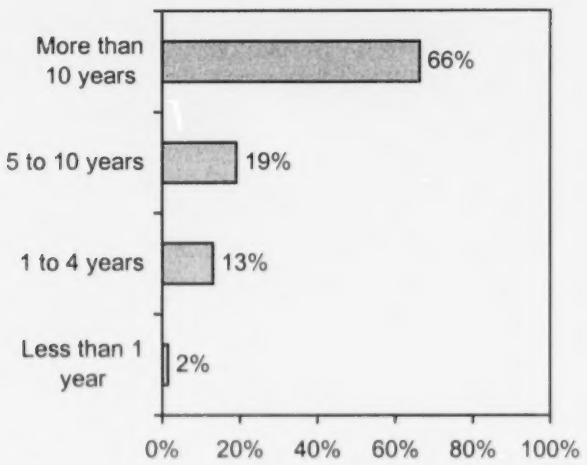
Instrument

The main data collection instrument was a questionnaire that was developed for this study. The original form of the questionnaire was in Turkish, which contains 95 items in seven main sections. Those sections were about background information, teachers' beliefs about computer use in education, level of computer use at schools, schools' and teachers' needs to improve use of computers at schools, teachers' problems related with computers and in service education. Questions' types were yes/no, selection, ordering according to the importance, and five level Likert scale.

Results

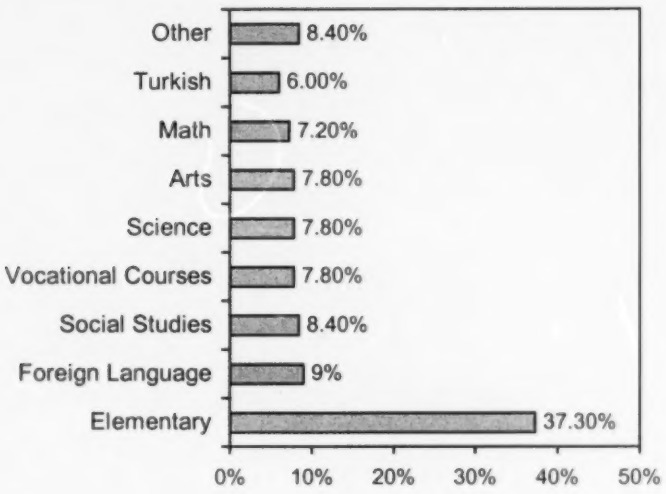
Most of the teachers participated in this study have more than ten years teaching experience (Figure 1). One reason for this is that the selected schools are from three major cities of Turkey. The appointment system in Turkish schools usually results in more experienced teachers work in major cities. Therefore, we can say that the sample is representative of the urban areas in the central and western parts of the country.

Figure 1: Frequency of participating teachers with respect to years of teaching experience



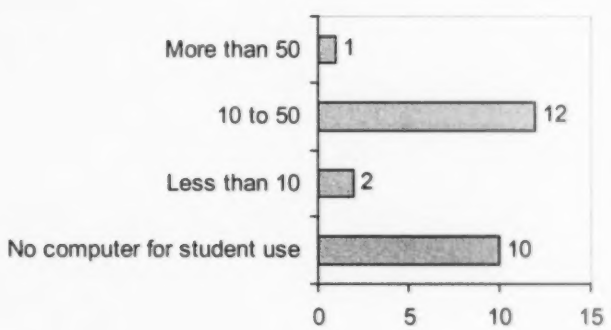
The participating teachers' subject areas are given in Figure 2. There were both elementary (37%) and secondary school-teachers (63%). Elementary school-teachers in Turkey teach a group of students from first grade till fifth grade, and they teach all subjects at all levels with minor exception in some schools. Rest of the participating teachers was teaching various subjects in secondary schools.

Figure 2: Frequency of teachers by subject taught



Of the participating schools, 10 out of 25 did not have any computers for student use (some of these schools have computers for office use only). The number of computers for student use in the schools of this study is given in Figure 3.

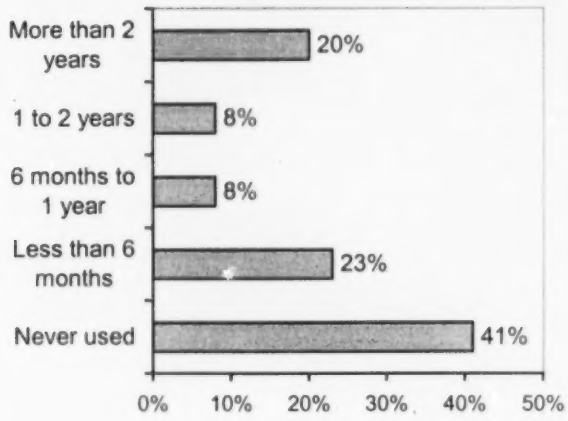
Figure 3: Frequency of schools based on the number of computers



Survey results indicated that 41% of the participating teachers had never used a computer before (Figure 4). 20% of the teachers had more than two years of experience in using computers. Among all of the participating teachers, 56% indicated a high interest in learning about using

computers. 42% of the teachers indicated that they have a moderate interest in learning about computer use. Only two percent responded that they are not interested in learning about computers.

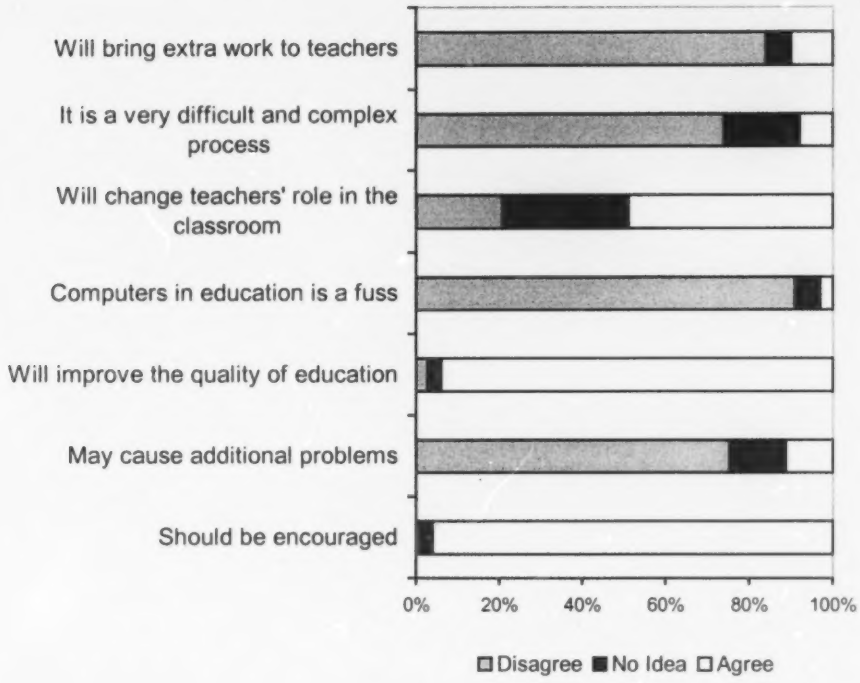
Figure 4: The experience of teachers in using computers



Teachers were also asked about the sources from which they have learned about using computers. More than half of the teachers, who indicated that they knew how to use computers, responded that they have completed an in-service training program related to computers. This means that, among all teachers participated in this study, 21% attended to such an in-service program. Teachers also stated that they have learned about computers by their individual efforts, private computer courses, and in their college courses.

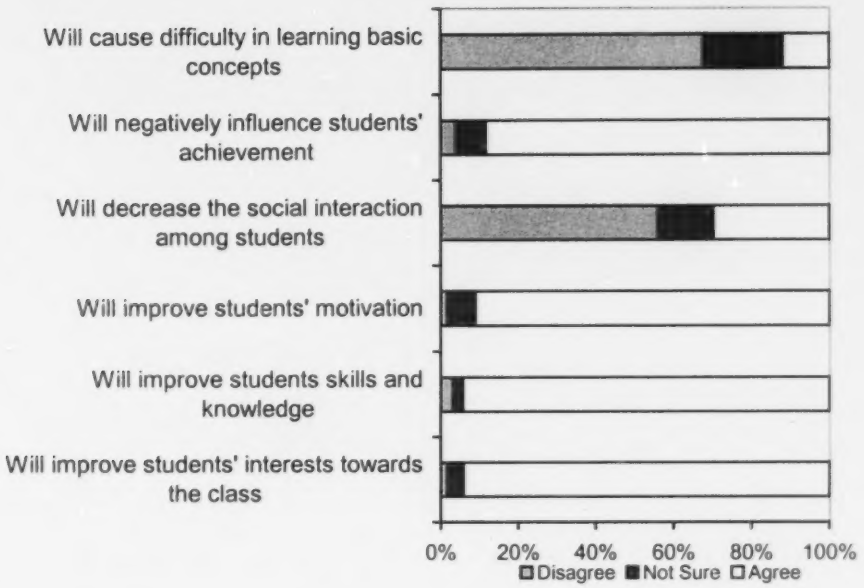
Figure 5 presents teachers' beliefs about the use of computers in instruction. As the figure illustrates, teachers' beliefs about the computers are mostly positive. Most of them believed that the computer use in education would improve the educational practice. It is worth to note that teachers did not believe that the computer use in the class would bring them an extra work. When asked whether they think that the computer use in instruction will change their role in the classroom, more than half of them believed that their role would change.

Figure 5: Teachers' beliefs about the use of computers in teaching



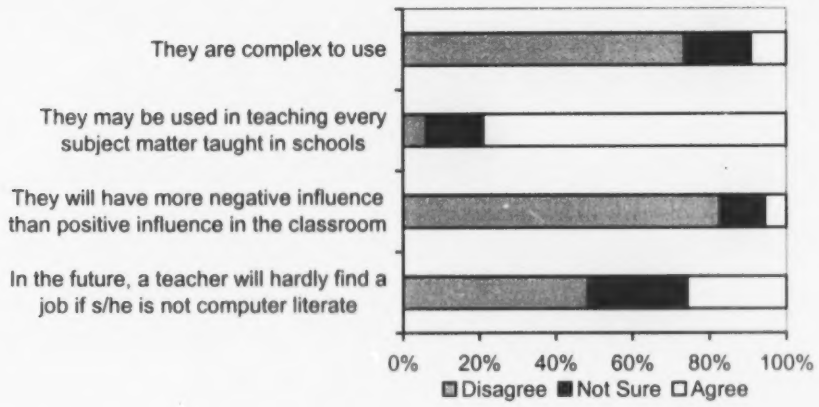
Similarly, their responses were mostly positive to the questions about the possible effects of computers to student learning. Most teachers did not agree that the computer use in the classroom would result in a difficulty in student learning (67%), nor it will negatively influence student achievement (88%). A majority of the teachers believed that computers would increase students' skills in related school tasks (91%); interests (92%) and motivations (89%) toward their classes, and their achievements in school related subjects. According to the survey results, more than half of the participants did not have concerns about the student socialization in a computer rich environment (56%). Of all the participants, 30% agreed that computer rich school environment may result in less socialization among student (Figure 6).

Figure 6: Teachers' beliefs about the possible effects of the use of computers in schools



A majority of the teachers believed that computers are not complex tools to use (73%). Their responses did not change according to the level of their experience in using computers, or their experience in teaching. Similarly, most of the teachers believed that computers would not have a negative effect to classroom practice (82%), and they may be used in teaching every subject matter in school (79%) (Figure 7).

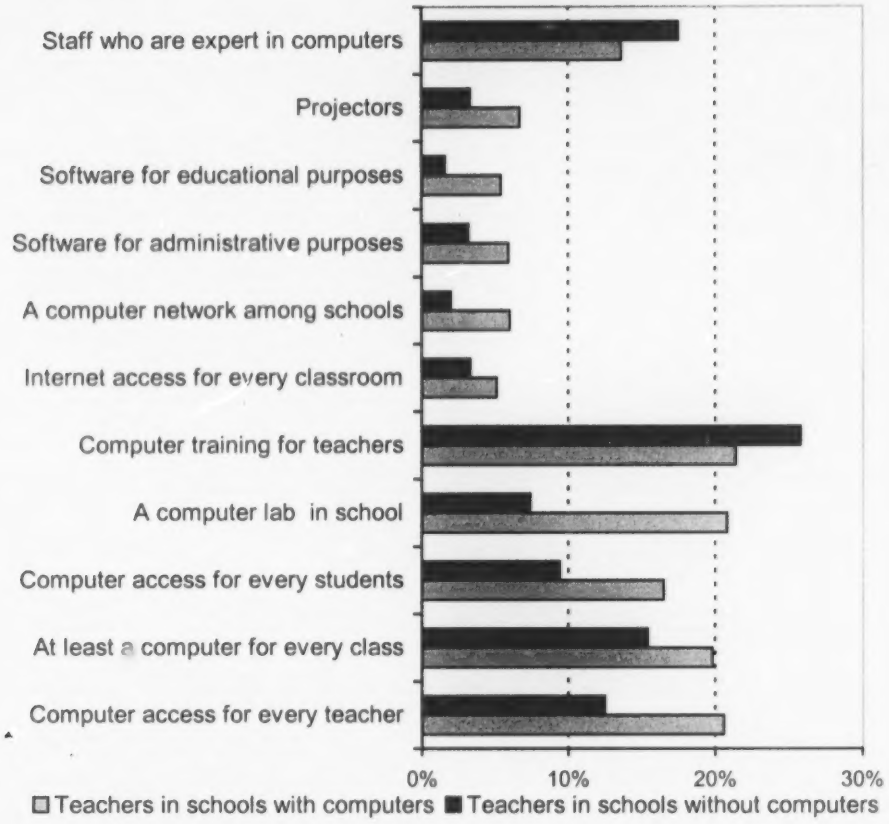
Figure 7: Teachers' beliefs about computers


They are complex to use
They may be used in teaching every subject matter taught in schools
They will have more negative influence than positive influence in the classroom
In the future, a teacher will hardly find a job if s/he is not computer literate
0%
20%
40%
60%
80%
100%
Disagree
Not Sure
Agree

Teachers were also asked to rank the needs of their schools in order to initiate a technology-integrated curriculum. Figure 8 shows their responses to this question. The figure presents the frequencies of the needs that are ranked by the teachers of schools with and without computers for student use. The top priorities of the teachers working in schools where students have computer access were; (1) educating teachers in computer literacy, (2) a computer lab in the school, (3) availability of computers for teacher use, and (4) at least one computer in each classroom. The top priorities of the teachers working in schools with no computers for student use were (1) educating teachers in computer literacy, (2) technical staff to deal with computers in the school, and (3) at least one computer for every classroom.

It appears from the results of this survey that, according to teachers, the most important need of schools in terms of integrating technology into curriculum is the need for improvement of teachers' level of computer knowledge and expertise. Moreover, it was quite interesting to observe that, teachers working in schools with available computers, selected the need for computer lab as one of the top priorities, whereas, the teachers of the schools that do not have computer labs did not emphasize the need for computer labs as much as the others needs.

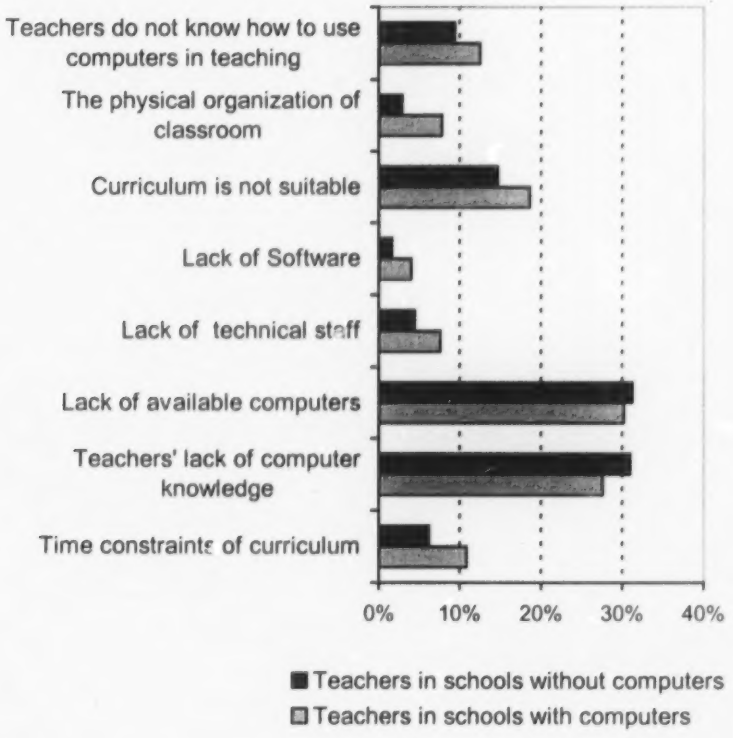
Figure 8: Ranking schools' needs in terms of integrating technology into curriculum?



Similarly, teachers were also asked to rank the possible obstacles from a list of eight items that might prevent teachers from integrating computers into curriculum. The selected top three obstacles were; (1) lack of available computers, (2) lack of teachers' expertise in computers, and (3) unsuitable school curricula for integrating technology. The priorities did not substantially differ between the teachers of schools with and without available computers. Notably, teachers working in the schools where the computers are available, still selected the lack of computers to be at the top of their obstacle list. This may mean that teachers do not have convenient access to clusters of computers in their schools.

These results should not be interpreted in a way that the rest of items in Figure 9 are not as important as these three. However, considering the current state of the schools, this is how teachers rank the obstacles. Once these urgent problems have been solved, there may always be other barriers for integrating technology into the curriculum.

Figure 9: Obstacles for integrating computers into curriculum



The survey also asked teachers to select most central objectives for computer use in education from a list of ten. The objectives most commonly supported by teachers were "preparing instructional materials for classrooms (exam questions etc.)," "grading," and "office use." The use of computers for the purpose of teaching the school subjects was also notably selected by teachers, but not as commonly as these three objectives.

Among the participating teachers, 43 of them completed an in-service training about the use of computers. When asked about the problems and the quality of this training, their responses indicated that teachers tended to be not satisfied with the training program they had completed. Among the teachers who had attended an in-service program, more than sixty percent reported that they did not have enough practice during their in-service training. Seventy percent reported that they did not spend sufficient time for the topics covered, and they also indicated that these topics and documents were not related to actual school settings. Sixty percent of the teachers reported that, after the in-service training, they did not have any chance to improve themselves, and use their knowledge in their schools. In fact, twenty percent of these teachers were working in schools where no computers are available. Finally, 61 % of them stated that it is necessary to get an in-service education again.

Summary and Conclusion

As described in the previous section, teachers were optimistic and expressed positive beliefs about the implementation of computers in the classrooms. Many teachers view computer use as a valuable tool for instruction. Even the teachers, who have never used computers before, expressed as positive opinions as the ones who are experienced in using computers. In addition, most of them expressed a desire to learn more about how to use computers in their classrooms.

In expressing the concerns about the computer use in their schools, teachers reported that the lack of computers, unsuitable curriculum, and the lack of teachers' knowledge of computers are the most important problems of their schools. These findings demonstrated similarities to many other international studies. For example, as in many other developing countries, lack of equipment was a common problem in Turkish schools. Similarly, as in many other countries, there is a need for teacher education in the use of educational technologies in Turkey.

It is also interesting that majority of the teachers in our study did not report resistance for the use of technology in schools. On the contrary, in many other countries, similar study results showed some resistance and even veteran teachers generally accused as techno phobia group of educators. In this sense, we may say that Turkey has an advantage for the level of technology acceptance in schools by teachers.

The researchers believe that, if it is well organized, the integration of computers into schools curricula will improve the learning. As the results show, in order to be well organized, the teachers should be educated according to the use of computers into schools. As well as, the schools need to be well organized with related technologies and supporting teachers use of these environment. This support could be means of technical support people and related educational software as well as instructional experts.

Based on the findings, the researchers recommend that;

(a) There is a need for teacher training workshops in computers, which must be provided in depth so that teachers can become educated in how to introduce and implement the use of computers in the classroom;

(b) The schools should employ team of people who are well-supported and skilled in instructional technologies;

(c) There is a need for the change in the national school curricula to be flexible enough to enable the computers to be used in the classroom;

(d) In addition to teacher training workshops, the technology and especially the Internet should be used for continuous training of teachers. By using communication technologies, virtual online teacher communities can be created. By this way teachers can share their practices and experiences with other teachers without leaving their schools.

(e) By creating just-in-time electronic support systems teachers (even students and parents) can access and explore rich resources. Through such systems, they can access projects, learning modules, videos, lesson plans, many other resources and support in diffeent educational domains.

Integrating technology into the school curriculum is a challenge for Turkey, as well as for most of the developing countries. The decisions in such movements should be based on sound research that enlightens the question marks for the specific context that is being focused. The use of computer technology is not very frequent in Turkish schools. As this study revealed, most of the teachers are not familiar with computer technology. This study definitely has the limitations of quantitative research methodology. For future researches the results of this study should be verified by a series of other qualitative studies. Also, future studies should focus more on how teachers will react the use of computers in their classrooms.

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